What is claimed is:

1. A composition comprising polychloroethylene and a stabilizing amount of stable free radical stabilizer.

2. The composition of claim 1 wherein the polychloroethylene is selected from trichloroethylene and perchloroethylene.

3. The composition of claim 2 wherein the free radical stabilizer is present in amounts of at least 1 part per million parts of polychloroethylene.

4. The composition of claim 3 wherein the free radical stabilizer is a material having the 2,2,6,6-tetra(lower alkyl)-1-piperidinyloxy-yl free radical group.

5. The composition of claim 4 wherein the 2,2,6,6-tetra(lower alkyl)-1-piperidinyloxy-yl free radical group is the 2,2,6,6-tetramethyl-1-piperidinyloxy-yl free radical group.

6. The composition of claim 3 wherein the stable free radical stabilizer is a material having the 2,2,6,6-tetra(lower alkyl)-1-piperidinyloxy-4-yl free radical group.

7. The composition of claim 6 wherein the stable free radical stabilizer is a material having the group 2,2,6,6-tetramethyl-4-hydroxy-1-piperidinyloxy, 2,2,6,6-tetramethyl-4-amino-piperidinyloxy, 2,2,6,6-tetramethyl-4-dimethylamino-piperidinyloxy, 2,2,6,6-tetramethyl-4-ethanoyloxy piperidinyloxy, 2,2,6,6-tetramethyl-4-oxo-1-piperidinyloxy, 2,2,6,6-tetramethyl-4-((methylsulfonyl)oxy)-1-piperidinyloxy, or 2,2,6,6-tetramethyl-1-piperidinyloxy-4-yl benzoate.

8. The composition of claim 6 wherein the stable free radical stabilizer is bis(2,2,6,6-tetramethyl-1-piperidinyloxy-4-yl) ester of saturated dicarboxylic acid.

9. The composition of claim 8 wherein the saturated dicarboxylic acid contains from 2 to 13 carbon atoms.

10. The composition of claim 8 wherein the stable free radical stabilizer is bis(2,2,6,6-tetramethyl-1-piperidinyloxy-4-yl) sebacate.

11. The composition of claim 3 wherein the free radical stabilizer is a material having the 2,2,6,6-tetramethyl-4-hydroxy-1-piperidinyloxy group, which material is present in amounts of from 2 to 15 parts per million parts of polychloroethylene.

12. The composition of claim 2 wherein the free radical stabilizer is present in amounts of from 2 to 15 parts per million parts of polychloroethylene.

13. The composition of claim 3 wherein the free radical stabilizer is a material having the 2,2,5,5-tetra(lower alkyl) pyrrolidinyloxy group.

14. The composition of claim 13 wherein the 2,2,5,5-tetra(lower alkyl) pyrrolidinyloxy group is 2,2,5,5-tetramethyl pyrrolidinyloxy.

15. The composition of claim 14 wherein the free radical stabilizer is a material having the group 2,2,5,5-tetramethyl-3-amino-pyrrolidinyloxy, 2,2,5,5-tetramethyl-1-oxa-3-azacyclopentyl-3-oxy, or 2,2,5,5-tetramethyl-3-pyrrolinyl-1-oxy-3-carboxylic acid.

16. A composition comprising trichloroethylene and a stabilizing amount of a stable free radical stabilizer.

17. The composition of claim 16 wherein the free radical stabilizer group is present in amounts of at least 1 part per million parts of trichloroethylene.

18. The composition of claim 17 wherein the free radical stabilizer is a material having the 2,2,6,6-tetra(lower alkyl)-1-piperidinyloxy-yl free radical group.

19. The composition of claim 18 wherein the 2,2,6,6-tetra(lower alkyl)-1-piperidinyloxy-yl free radical group is the 2,2,6,6-tetramethyl-1-piperidinyloxy free radical group.

20. The composition of claim 17 wherein the stable free radical stabilizer is a material having a 2,2,6,6-tetra(lower alkyl)-1-piperidinyloxy-4-yl free radical group.

21. The composition of claim 20 wherein the stable free radical stabilizer is a material having the group 2,2,6,6-tetramethyl-4-hydroxy-1-piperidinyloxy, 2,2,6,6-tetramethyl-4-amino-piperidinyloxy, 2,2,6,6-tetramethyl-4-dimethylamino-piperidinyloxy, 2,2,6,6-tetramethyl-4-ethanoyloxy-piperidinloxy, 2,2,6,6-tetramethyl-4-oxo-1-piperidinyloxy, 2,2,6,6-tetramethyl-4-((methylsulfonyl)oxy)-1-piperidinyloxy, or 2,2,6,6-tetramethyl-1-piperidinyloxy-4-yl benzoate.

22. The composition of claim 17 wherein the stable free radical stabilizer is bis(2,2,6,6-tetramethyl-1-piperidinyloxy-4-yl) ester of saturated dicarboxylic acid.

23. The composition of claim 22 wherein the saturated dicarboxylic acid contains from 2 to 13 carbon atoms.

24. The composition of claim 22 wherein the stable free radical stabilizer is bis(2,2,6,6-tetramethyl-1-piperidinyloxy-4-yl) sebacate.

25. The composition of claim 17 wherein the free radical stabilizer is a material having the 2,2,6,6-tetramethyl-4-hydroxy-1-piperidinyloxy group, which material is present in amounts of from 2 to 15 parts per million parts of trichloroethylene.

26. The composition of claim 16 wherein the free radical stabilizer group is present in amounts of from 2 to 15 parts per million parts of trichloroethylene.

27. A composition comprising perchloroethylene and a stabilizing amount of a stable free radical stabilizer.

28. The composition of claim 27 wherein the free radical stabilizer is present in amounts of at least 1 part per million parts of perchloroethylene.

29. The composition of claim 28 wherein the free radical stabilizer is a material having the 2,2,6,6-tetra(lower alkyl)-1-piperidinyloxy-yl free radical group.

30. The composition of claim 29 wherein the 2,2,6,6-tetra(lower alkyl)-1-piperidinyloxy-yl free radical group is the 2,2,6,6-tetramethyl-1-piperidinyloxy-yl free radical group.

31. The composition of claim 28 wherein the stable free radical stabilizer is a material having the 2,2,6,6-tetra(lower alkyl)-1-piperidinyloxy-4-yl free radical group.

32. The composition of claim 31 wherein the stable free radical stabilizer is a material having the group 2,2,6,6-tetramethyl-4-hydroxy-1-piperidinyloxy, 2,2,6,6-tetramethyl-4-amino-piperidinyloxy, 2,2,6,6-tetramethyl-4-dimethylamino-piperidinyloxy, 2,2,6,6-tetramethyl-4-ethanoyloxy-piperidinyloxy, 2,2,6,6-tetramethyl-4-oxo-1-piperidinyloxy, 2,2,6,6-tetramethyl-4-((methylsulfonyl)oxy)-1-piperidinyloxy, or 2,2,6,6-tetramethyl-1-piperidinyloxy-4-yl benzoate.

33. The composition of claim 28 wherein the stable free radical stabilizer is bis(2,2,6,6-tetramethyl-1-piperidinyloxy-4-yl) ester of saturated dicarboxylic acid.

34. The composition of claim 33 wherein the saturated dicarboxylic acid contains from 2 to 13 carbon atoms.

35. The composition of claim 33 wherein the stable free radical stabilizer is bis(2,2,6,6-tetramethyl-1-piperidinyloxy-4-yl) sebacate.

36. The composition of claim 28 wherein the free radical stabilizer is a material having the 2,2,6,6-tetramethyl-4-hydroxy-1-piperidinyloxy group, which material is present in amounts of from 2 to 15 parts per million parts of perchloroethylene.

37. The composition of claim 27 wherein the free radical stabilizer group is present in amounts of from 2 to 15 parts per million parts of perchloroethylene.

38. A method for removing stable free radical stabilizer from a liquid composition comprising polychloroethylene and a minor amount of stable free radical stabilizer, comprising contacting said liquid composition with an amount of silica sufficient to adsorb stable free radical stabilizer and provide a polychloroethylene composition substantially free of stable free radical stabilizer.

39. The method of claim 38 wherein the polychloroethylene is trichloroethylene or perchloroethylene.

40. The method of claim 39 wherein the silica is precipitated silica, silica gel or fumed silica.